IN THE CLAIMS:

1. (CURRENTLY AMENDED) A method for allowing a router to efficiently determine a capability and configuration of a peer router in a computer network, the method comprising the steps of:

automatically determining which capability mode of operation the peer router supports by sending an initial message from the router to the peer router, the initial message including a first predetermined value of the capability;

if the router receives a positive acknowledgement of the initial message from the peer router, determining that the peer router supports exchanges of messages using a new capability mode of operation; and

if the router receives a negative acknowledgement of the initial message from the peer router, deciding that the peer router does not support the new capability mode of operation,; and switching to an old capability mode of operation by resending the initial message with a second predetermined value of the capability.

2. (ORIGINAL) The method of Claim 1 wherein the step of deciding comprises the step of, if the router does not receive a response at all within a predetermined time, deciding that the peer router does not support the new capability mode of operation.

3. (ORIGINAL) The method of Claim 1 wherein the initial message is Border Gateway Protocol (BGP) routing protocol message and wherein the capability is a time-to-live (TTL) parameter.

4. (ORIGINAL) The method of Claim 3 wherein the new capability mode of operation is defined by BGP TTL Security Hack (BTSH).

5. (ORIGINAL) The method of Claim 4 wherein the first predetermined value of the TTL parameter capability is 255.

6. (ORIGINAL) The method of Claim 3 wherein the second predetermined value of the TTL parameter is 1.

7. (ORIGINAL) The method of Claim 1 further comprising the steps of, in response to the router receiving a negative acknowledgement of the initial message from the peer router:

upgrading the peer router to the new capability mode of operation;

rebooting the peer router, thereby destroying an existing session between the routers;

establishing a new session by sending messages with the first predetermined value of the capability; and

communicating between the routers using messages with the first predetermined value of the capability.

8. (ORIGINAL) A system adapted to allow a router to efficiently determine a capability and configuration of a peer router in a computer network, the system comprising:

a routing protocol process executing in the peer router and adapted to receive an initial routing protocol message sent by an initiating routing protocol process executing in the router, the initial routing protocol message including a predetermined value of the capability, the routing protocol process returning one of (i) a positive acknowledgement of the initial routing protocol message to the router if the peer router supports exchanges of

messages using a new capability mode of operation and (ii) a negative acknowledgement of the initial routing protocol message if the peer router does not support the new capability mode of operation.

9. (ORIGINAL) The system of Claim 8 wherein the routing protocol process executing in the peer router is the Border Gateway Protocol version 4 (BGP) routing protocol and wherein the capability is a time-to-live (TTL) parameter.

10. (ORIGINAL) The system of Claim 9 wherein the new capability mode of operation is defined by BGP TTL Security Hack (BTSH).

11. (ORIGINAL) The system of Claim 10 wherein the predetermined value of the TTL parameter capability is 255.

12. (CURRENTLY AMENDED) Apparatus adapted to allow a router to efficiently determine a capability and configuration of a peer router in a computer network, the apparatus comprising:

means for sending an initial message from the router to the peer router, the initial message including a first predetermined value of the capability;

~~if the router receives a positive acknowledgement of the initial message from the peer router,~~ means for determining that the peer router supports exchanges of messages using a new capability mode of operation, if the router receives a positive acknowledgement of the initial message from the peer router,;

~~if the router receives a negative acknowledgement of the initial message from the peer router,~~ means for deciding that the peer router does not support the new capability mode of operation, if the router receives a negative acknowledgement of the initial mes-

sage from the peer router, ~~;~~ and ~~means~~ for switching to an old capability mode of operation by resending the initial message with a second predetermined value of the capability.

13. (ORIGINAL) The apparatus of Claim 12 wherein the means for deciding comprises, if the router does not receive a response at all within a predetermined time, means for deciding that the peer router does not support the new capability mode of operation.

14. (ORIGINAL) The apparatus of Claim 12 wherein the initial message is Border Gateway Protocol (BGP) routing protocol message, the capability is a time-to-live (TTL) parameter and the new capability mode of operation is defined by BGP TTL Security Hack (BTSH).

15. (ORIGINAL) The apparatus of Claim 12 further comprising, in response to the router receiving a negative acknowledgement of the initial message from the peer router:

means for upgrading the peer router to the new capability mode of operation;

means for destroying an existing session between the routers;

means for sending messages with the first predetermined value of the capability; and

means for communicating between the routers using messages with the first predetermined value of the capability.

16. (CURRENTLY AMENDED) A computer readable medium containing executable program instructions for allowing a router to efficiently determine a capability and configuration of a peer router in a computer network, the executable program instructions comprising program instructions for:

automatically determining which capability mode of operation the peer router supports by sending an initial message from the router to the peer router, the initial message including a first predetermined value of the capability;

if the router receives a positive acknowledgement of the initial message from the peer router, determining that the peer router supports exchanges of messages using a new capability mode of operation;

if the router receives a negative acknowledgement of the initial message from the peer router, deciding that the peer router does not support the new capability mode of operation, ~~;~~ and switching to an old capability mode of operation by resending the initial message with a second predetermined value of the capability.

17. (ORIGINAL) The computer readable medium of Claim 16 wherein the program instruction for deciding comprises one or more program instructions for, if the router does not receive a response at all within a predetermined time, deciding that the peer router does not support the new capability mode of operation.

18. (ORIGINAL) The computer readable medium of Claim 16 wherein the initial message is Border Gateway Protocol (BGP) routing protocol message and wherein the capability is a time-to-live (TTL) parameter.

19. (ORIGINAL) The computer readable medium of Claim 18 wherein the new capability mode of operation is defined by BGP TTL Security Hack (BTSH).

20. (ORIGINAL) The computer readable medium of Claim 16 further comprising program instructions for, in response to the router receiving a negative acknowledgement of the initial message from the peer router:

upgrading the peer router to the new capability mode of operation;

destroying an existing session between the routers;

sending messages with the first predetermined value of the capability; and

communicating between the routers using messages with the first predetermined value of the capability.

21. (ORIGINAL) A system adapted to allow a router to efficiently determine a capability and configuration of a peer router in a computer network, the system comprising:

an initiating routing protocol process executing in the router and adapted to send an initial routing protocol message to a routing protocol process executing in the peer router, the initial routing protocol message including a predetermined value of the capability, the initiating routing protocol process receiving one of (i) a positive acknowledgement of the initial routing protocol message if the peer router supports exchanges of messages using a new capability mode of operation and (ii) a negative acknowledgement of the initial routing protocol message if the peer router does not support the new capability mode of operation.

22. (ORIGINAL) The system of Claim 21 wherein the initiating routing protocol process executing in the router is the Border Gateway Protocol version 4 (BGP) routing protocol and wherein the capability is a time-to-live (TTL) parameter.

23. (ORIGINAL) The system of Claim 22 wherein the new capability mode of operation is defined by BGP TTL Security Hack (BTSH).

24. (ORIGINAL) The system of Claim 23 wherein the predetermined value of the TTL parameter capability is 255.

25. (NEW) A method comprising:

sending an initial message to a peer router before a session is established with the peer router, the initial message including a first predetermined value of a capability in a field that is outside of a routing protocol that makes use of the capability;

if a positive acknowledgement of the initial message is received from the peer router, determining that the peer router supports exchanges of messages using a new capability mode of operation;

if a negative acknowledgement of the initial message is received from the peer router, deciding that the peer router does not support the new capability mode of operation and switching to an old capability mode of operation by resending the initial message with a second predetermined value of the capability.

26. (NEW) The method of Claim 25 wherein deciding further comprises, if a response is not received within a predetermined time, deciding that the peer router does not support the new capability mode of operation.

27. (NEW) The method of Claim 25 wherein the initial message is a Border Gateway Protocol (BGP) routing protocol message and wherein the capability is a time-to-live (TTL) parameter.

28. (NEW) The method of Claim 27 wherein the new mode of operation is a BGP TTL Security Hack (BTSH).

29. (NEW) The method of Claim 25 further comprising, in response to receiving a negative acknowledgement of the initial message from the peer router:

upgrading the peer router to the new capability mode of operation;

rebooting the peer router, thereby destroying an existing session between the routers;

establishing a new session by sending messages with the first predetermined value of the capability; and

communicating using messages with the first predetermined value of the capability.

30. (NEW) An apparatus comprising:

a processor configured to execute an initiating routing protocol process, the initiating routing protocol process configured to send an initial routing protocol message to a routing protocol process of a peer router before a session is established with the peer router, the initial routing protocol message including a predetermined value of a capability in a field that is outside of a routing protocol that makes use of the capability, and wherein

the initiating routing protocol process is further configured to receive one of (i) a positive acknowledgement of the initial routing protocol message if the peer router supports exchanges of messages using a new capability mode of operation and (ii) a negative acknowledgement of the initial routing protocol message if the peer router does not support the new capability mode of operation, and in response to a negative acknowledge-

ment of the initial routing protocol message, switch to an old capability mode of operation and resend the initial message with another predetermined value of the capability.

31. (NEW) The apparatus of Claim 30 wherein the initiating routing protocol process is further configured to, if a response is not received within a predetermined time, decide that the peer router does not support the new capability mode of operation.

32. (NEW) The apparatus of Claim 30 wherein the initiating routing protocol process is a Border Gateway Protocol version 4 (BGP) routing protocol process and wherein the capability is a time-to-live (TTL) parameter.

33. (NEW) The apparatus of Claim 32 wherein the new capability mode of operation is defined by BGP TTL Security Hack (BTSH).